CLAIMS

1. A maskless nano-ion-beam lithography (MNBL) system, comprising:

a plasma generator which produces ions in a plasma generation region;

a pattern generator positioned adjacent to the plasma generation region of the ion source for electrostatically producing a controlled pattern of micro-ion-beamlets;

a high voltage source connected between the pattern generator and workpiece for accelerating and focusing the micro-ion-beamlets extracted from the plasma generation region through the pattern generator to produce a demagnified final ion beam on the workpiece.

2. The MNBL system of Claim 1 wherein the plasma generator comprises a multicusp ion source.

3. The MNBL system of Claim 1 wherein the pattern generator comprises a two electrode blanking system.

4. The MNBL system of Claim 1 further comprising a low voltage source connected to the pattern generator for applying voltages to the pattern generator to control individual beamlets.

5. The MNBL system of Claim 1 wherein the pattern generator comprises a pair of spaced electrodes having a plurality of apertures therethrough, and a controllable